REMARKS

Present Status of the Application

This is a full and timely response to the outstanding non-final Office Action mailed on July 7, 2004. The Office Action has rejected claims 1-11 under 35 U.S.C. 35 U.S.C. 103(a) as being unpatentable over Yang (USP 6,426,016) in view of Wolf et al. Silicon Processing for the VLSI Era, Vol. 1 Lattice Press 1986, pp. 166-174, 182, 195, further in view of Wang et al. (US, 6291331) and Perng (US 6,523,494).

Claims 1-11 are pending of which claims 1 and 5 have been amended and claims 2, 6-7 to more accurately describe the invention. It is believed that no new matter is added by way of these amendments made to the claims or otherwise to the application.

After carefully considering the remarks set forth in this Office Action and the cited references, Applicants respectfully submitted that the presently pending claims are in condition for allowance. Reconsideration and withdrawal of the Examiner's rejection are requested.

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Discussion of Office Action Rejections

The Office Action rejected claims 1-11 under 35 U.S.C. § 103(a) as being unpatentable over Yang et al. (USP 6,426,016, Yang hereinafter) in view of Wolf et al., Silicon Processing for the VLSI Era, Vol. 1, Lattice Press 1986, pp. 166-174, 182-195, further in view of Wang et al. (USP 6,291,331, Wang hereinafter), and Perng et al. (USP 6,523,494, Perng hereinafter).

As described in detail hereinafter, Applicants respectfully submit that Yang in view Wolf and further in view of Wang and Perng is legally deficient for the purpose of rendering claims 1 and 5 unpatentable because the reference or references, taken alone or combined, fails to teach or suggest each and every element recited in the claims.

The present invention teaches in claim 1, among other things, performing a plasma-enhanced chemical vapor deposition process to form a first passivation layer over the metallic layer, wherein the plasma-enhanced chemical vapor deposition process is carried out at a processing pressure between about 21to 25 Torrs and with a processing power between about 1 to 45 Watts. Fabricating a passivation layer with a higher pressure and a lower processing power reduces the degree of damage to the metallic layers. The present invention further teaches in claim 5, among other things that performing a semi-atmospheric chemical vapor deposition process with liquid tetra-ethyl-ortho-silicate (TEOS) and ozone inside a reaction chamber to form a first passivation layer over the metallic layer, wherein the liquid tetra-ethyl-ortho-silicate flowing into the reaction chamber has a flow rate between 500 sccm to 3000 sccm and the ozone flowing into the reaction chamber has a

flow rate between 5000 sccm to 15000 sccm can also have the same effect of reducing damage to the underlying metallic layers.

As recognized by the Office, Yang simply discloses using PECVD to form a first passivation layer and a silicon nitride layer. Yang fails to teach or suggest performing the PECVD under certain processing conditions in order to prevent damage to the underlying metallic layers. The Office then relies on Wolf to teach the conventional method of deposition for silicon oxide and silicon nitride. Again, there is no suggestion in Wolf that by fabricating a passivation layer with a higher pressure and a lower processing power in a PECVD process or performing SACVD at the claimed processing conditions reduces the degree of damage to the metallic layers. However, the Office further relies on Wang and Perng to teach the conventional processing conditions in PECVD and SACVD. First of all, Wang teaches performing a PECVD process at a pressure too low (5 to 8 torr at col. 7, ln. 23-24) to achieve the advantages of the instant case. Second, Wang is completely silent about the process power at between 1 to 45 Watts. Third, the PECVD layer of Wang is deposited over another oxide layers of PETEOS oxide and SACVD oxide to resolves the problems of via cracking. It is thus obvious that Wang fails to even recognize the problem of the instant case of forming a PECVD layer at high pressure over a metallic layer to prevent damage to the metallic layer. Therefore, a motivation to combine Wang with other prior art references is lacking. Regarding Perng, Perng discloses a PECVD process conducted at a pressure that is too low (1-20 torr) and a power that is too high (50-150W)

to mitigate damage to the underlying metallic layers. Although Perng also teaches a forming a SACVD layer, the SACVD layer of Perng is formed over a PECVD layer, rather than over a metallic layer. Further, Perng fails to disclose the required flow rates for the TEOS and O_2 gas used in forming the SACVD layer so as the damage to the underlying metallic layer can be mitigated.

For at least the above reasons that Yang in view Wolf and further in view of Wang and Perng fails to teach or suggest each element in the claims, Applicants respectfully assert that claims 1 and 5 patentably define over Yang in view Wolf and further in view of Wang and Perng. Since claims 3-4 and 8-11 are dependent claims which further defines the invention recited in claims 1 and 5, respectively, Applicants respectfully assert that these claims also are in condition for allowance. Thus, reconsideration and withdrawal of this rejection are respectively requested.

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CONCLUSION

For at least the foregoing reasons, it is believed that the presently pending claims 1, 3-5, 8-11 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,

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